WHAT IS CLAIMED IS:

1. An air bearing slider comprising:

a slider body, a leading edge, a trailing edge and at least one raised bearing surface proximate to the trailing edge and at least one stepped bearing surface recessed below the at least one raised bearing surface; and

a recessed cavity surface recessed below the at least one raised bearing surface and the at least one stepped bearing surface and a leading edge cavity step from the recessed cavity surface to the at least one raised bearing surface to form an adaptive bearing surface.

2. The air bearing slider of claim 1 wherein the cavity surface is recessed a depth greater than approximately 1.0 μm below the at least one raised bearing surface.

3. The air bearing slider of claim 1 wherein the cavity surface has a recessed depth greater than or equal to 2.0 μm and the stepped bearing surface is recessed less than or equal to 0.5 μm from the at least one raised bearing surface.

4. The air bearing slider of claim 1 wherein the cavity surface is recessed a depth greater than approximately 2.0 μm below the at least one raised bearing surface and the at least one stepped bearing surface is recessed approximately 0.1 - 0.3 μm below the at least one raised bearing surface.

5. The air bearing slider of claim 1 wherein the at least one raised bearing surface includes a raised bearing rail having a convergent channel formed therealong between opposed rail portions and the convergent channel includes the recessed cavity surface proximate to a trailing edge of the raised bearing rail to

form the leading edge cavity step from the recessed cavity surface to the at least one raised bearing surface.

6. The air bearing slider of claim 5 wherein the convergent channel includes multiple recessed cavity surface depths along the raised bearing rail including a first channel or milled depth below a stepped depth of the at least one stepped bearing surface and a second channel or milled depth below the first channel or milled depth.

7. The air bearing slider of claim 6 wherein the first channel or milled depth is approximately 4.0 μm or greater and the second channel or milled depth is less than 4.0 μm and the second channel or milled depth forms the leading edge cavity step to the at least one raised bearing surface.

8. The air bearing slider of claim 1 including opposed rails having a trailing edge spaced from the trailing edge of the slider and having a stepped channel having a stepped bearing surface formed therealong to define leading edge bearing steps from the stepped bearing surfaces to the raised bearing surfaces of the opposed rails.

9. The air bearing slider of claim 5 including a cross channel formed between a leading edge bearing pad and a cavity dam and extending between opposed sides of the slider.

10. The air bearing slider of claim 1 and further comprising opposed stepped cavity dam rails extending along a length of the slider between the leading and trailing edges of the slider.

11. The air bearing slider of claim 1 wherein the at least one raised bearing surface includes opposed raised side portions and a raised cross portion to form a convergent channel cavity and the leading edge cavity step from a recessed cavity surface of the convergent channel cavity to the raised cross portion.

12. An air bearing slider comprising:

a slider body, a leading edge, a trailing edge and at least one raised bearing surface proximate to the trailing edge having a cross portion and opposed side portions and including a cavity channel relative to the cross portion and the opposed side portions of the at least one raised bearing surface having a recessed cavity surface recessed at least 1.0 μm from the at least one raised bearing surface and a leading edge cavity step from the recessed cavity surface to the at least one raised bearing surface proximate to the trailing edge of the slider.

13. The air bearing slider of claim 12 and including at least one stepped bearing surface forming a bearing step having a step height of approximately less than 0.5 μm.

14. The air bearing slider of claim 12 wherein the cavity channel is formed along a center rail having an elongate length to form the leading edge cavity step to the at least one raised bearing surface proximate to a trailing edge of the center rail.

15. The air bearing slider of claim 14 wherein the center rail includes opposed rail portions extending from a transverse cavity dam and forming the at least one raised bearing surface proximate to the trailing edge of the slider.

16. The air bearing slider of claim 14 wherein the center rail includes a tapered rail profile proximate to the trailing edge of the slider.

17. The air bearing slider of claim 14 and including opposed rails having a trailing edge spaced from the trailing edge of the slider and having a raised bearing surface and a stepped bearing surface to form a leading edge bearing step to the raised bearing surfaces of the opposed rails.

18. The air bearing slider of claim 17 wherein the opposed rails include a channel having a recessed channel surface recessed below the stepped bearing surface.

19. The air bearing slider of claim 18 wherein the opposed rails include a stepped inlet to the channel.

20. The air bearing slider of claim 14 and further including stepped cavity dam rails proximate to opposed sides of the slider having a stepped surface recessed below the at least one raised bearing surface .